

Listing of claims:

Claims 1 through 4, 11, 12, 14 through 25 and 30 are indicated by Examiner Patel as withdrawn.

Claims 5 through 10 and 13 are cancelled.

Claim 30 is believed to be improperly withdrawn and is amended below.

Currently Amend as follows:

-- 26. (Currently Amended.) Apparatus for reducing the fluid-dynamic base drag of a bluff body (20) moving through a fluid (21) and creating, at the rear of the body, a low pressure wake having an outer wake perimeter, which bluff body (20) has a substantially flat rear base surface (25), a pair of opposed side surfaces (22A and 22B), and opposed top and bottom surfaces all joined with said rear base surface at side, top and bottom trailing edges (24), respectively, so as to form a box-like container (30), said apparatus comprising:

means positioning side-by-side vortex generators in a linear array (40) ahead of the two side, top and (bottom) trailing edges (24) of said bluff body (20) for generating counter rotating stream-wise vortices in a fluid boundary layer (23) passing generally along said bluff body and creating from said layer separated shear surfaces (26) which turn sharply inward aft of said trailing edges (24);

(four) boattail plates (50) inset and affixed a predetermined distance from the top and side trailing edges (24); and

rear edges on said boattail plates (50) sized to intercept the separated shear surfaces (26) [of said fluid layer] at the outer perimeter of the low pressure wake, thereby providing maximum fluid-dynamic base drag reduction for said body. --

27. (Previously Added) The apparatus in accordance with claim 26 wherein the bluff body is a land vehicle moving in air, which vehicle has only three boattail plates attached adjacent the top and opposed side trailing edges; and

three linear arrays of vortex generators, one array each associated with one each of said boattail plates.

28. (Previously Added) The apparatus of claim 27 wherein the vortex generators are V shaped low drag vortex generators having an open end and a pointed end, and said apparatus further comprises:

said V shaped vortex generators in said linear arrays are positioned with said open end facing toward a forward end of said vehicle; and the pointed end of said V shaped vortex generators pointed toward the rear of said vehicle.

29. (Previously Added) The apparatus of claim 27 wherein said vehicle includes a truck trailer body with a rear opening into said box-like container, and further comprising:

boattail plate hinging means allowing said plates to swing clear from said rear opening for said trailer body. vns

30. (Currently Amended.) The apparatus of claim 27 wherein said trailer body has a pair of swinging rear doors vertically divided lengthwise top to bottom at about the center of the base surface, said [method] apparatus further comprising:

means dividing the top boattail plate at the point of division of the vehicle's rear swinging doors such that opening of the vehicle doors allows said boattail plates to separate and swing away together with the swinging doors of the trailer body.

31. (Previously Added) Apparatus for reducing the fluid-dynamic base drag of a bluff body in accordance with claim 26, and further comprising:

means positioning said affixing means at a predetermined inset distance of about 8 to 9 percent of the lesser of the height or width of said rear base surface.

32. (Previously Added) Apparatus for reducing the fluid-dynamic base drag of a bluff body in accordance with claim 26, said apparatus further comprising:

a front edge surface for each of said boattail plates; and

means hinging said front edge of said boattail plates to said base surface at said inset location. ✓NS

33. (Previously Added) Apparatus for reducing the fluid-dynamic base drag of a bluff body in accordance with claim 26 wherein said boundary layer has a given local thickness, said apparatus further comprising:

a thickness height for said generators in the range of $1/4$ to $1/5$ said local boundary layer thickness. ✓NS

34. (Previously Added) The apparatus of claim 26 wherein the cross sectional shape of the base surface of a bluff body has a perimeter shape other than a rectangle, and further comprising:

said boattail plates shaped with the perimeter of said base surface but at a smaller size, while maintaining the same predetermined inset distance from the edges of said bluff body and a similarly shaped rear edge for said boattail plates located to intercept the separated shear surfaces of said fluid flow at an outer perimeter of the low pressure wake. ✓NS

35. (Previously Added) Apparatus for reducing to a minimum the fluid-dynamic base drag of a bluff body moving through a fluid passing generally along said bluff body and creating, at the rear of the body, separated shear surfaces which define a low pressure wake having an outer wake perimeter, which bluff body has a substantially flat rear base surface with given height and width dimensions and a periphery of trailing edges, said apparatus comprising:

vortex generator means mounted adjacent to and forward of said trailing edges for generating counter-rotating stream-wise vortices in said fluid layer, which generators cause the separated shear surfaces to turned sharply inward thereby reducing the size of the low pressure wake, and

edge means coupled to said base surface and inset from said trailing edges for intercepting said separated shear surfaces at the outer perimeter of said low pressure wake, namely, at a distance behind said base surface of about $1/6$ th to $1/8$ th of said given height or width dimension, whichever is less. ✓

